**BIOL 1001 General Biology I** **Lec. 3 Lab. 0 Cr. 3**

**Effective Date: Fall 2009-2010**

## Course Description

Prerequisite: Eligibility for MATH 1021. An introduction to biological principles including scientific method, basic biochemistry, cell structure and function, metabolism, genetics, and evolution. Students cannot use both this course and BIOL 1201 to meet a degree's requirements.

## Course Objectives

1. Learn the philosophy of science and how the scientific method directs the investigation of naturally occurring phenomena.
2. Learn the structure and function of carbohydrates, lipids, proteins, and nucleic acids in living organisms.
3. Learn the structure and functions of the cell wall, the plasma membrane, cytoplasm, and cellular organelles in plant and animal cells.
4. Learn fundamental metabolic process: photosynthesis and cellular respiration.
5. Learn fundamental principles of genetics: the gene concept, heredity, and molecular biology.
6. Learn fundamental principles of evolutionary theory: how populations change and how these changes may lead to the rise of new species.

## Procedures to Evaluate these Objectives

1. Written examinations on lecture topics.
2. Final examination.
3. Special assignments.

## Use of Results of Evaluation to Improve the Course

1. Results of written examinations will be used to make modifications in the treatment of specific lecture topics.
2. Results of final examination will be used to make modifications in the treatment of specific lecture topics.
3. Results of special assignments will be used to determine the lecture topics that need additional emphasis.

**Detailed Topical Outline**

1. Concepts and Methods in Biology
2. Chemical Foundations for Cells
3. Carbon Compounds in Cells
4. Cell Structure and Function
5. Ground Rules for Metabolism
6. How Cells Acquire Energy
7. How Cells Release Stored Energy
8. Cell Division and Mitosis
9. Meiosis
10. Observable Patterns of Inheritance
11. Chromosomes and Human Genetics
12. DNA Structure and Function
13. From DNA to Proteins
14. Control Over Genes
15. Recombinant DNA and Genetic Engineering
16. Microevolution
17. Speciation
18. The Macroevolution Puzzle